

Dry Creek Helicopter Salvage Timber Sale

Environmental Assessment

Montana Department of Natural Resources and Conservation (DNRC)

Southwestern Land Office

Clearwater Unit

January 2005



Environmental Assessment (EA)

Appendix A - Maps: [Map 1](#) [Map 2](#)

Appendix B: [Wildlife Analysis](#)

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Appendix E: Responses to Comments

February 26, 2004

Initial Proposal
Dry Creek Helicopter Salvage Sale

The Montana Department of Natural Resources and Conservation, Clearwater Unit, is proposing a timber sale on State – owned portions of the following school trust lands.

Section 16
T.15 N., R.10 W., M.P.M.

The primary objective of this proposal is to harvest Douglas fir that has been, and will be, infested with the Douglas -fir bark beetle. This would be done in a manner consistent with the Montana D.N.R.C.'s mandate to produce revenue for the school trust. All actions taken would be in accordance with the Enabling Act, the Montana Environmental Policy Act and the State Forest Management Plan. Beetle killed and beetle infested trees will be cut, and trees within 200 feet may be thinned to reduce the potential spread of the beetle population. Dead trees that no longer can be turned into wood products would be marked as wildlife trees. This section has been included within a possible land exchange.

The area is known to provide habitat for White-tailed and Mule deer, Elk, Moose, Mountain Lion, Black and Grizzly Bears. It is part of a Grizzly Bear Management Unit and protective measures to fulfill the Endangered Species Act will be used. This proposal is in the general vicinity of Cooper's Lake and Kleinschmidt Flat near Ovando.

This proposed action would not construct any roads and could harvest up to one million board feet of timber. The proposed action may be implemented in 2004 and may be finished by 2005.

In preparation for this timber sale, specialists such as wildlife biologists, hydrologists, soil scientists, and archeologists will be consulted.

The Montana D.N.R.C. invites comments and suggestions concerning this proposal from all interested parties. Please respond by March 29, 2004.

Route all responses to:

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CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name:	Dry Creek Helicopter Salvage Sale
Proposed Implementation Date:	Spring 2005 through Fall 2005
Proponent:	Clearwater Unit, Southwestern Land Office, Montana D.N.R.C.
Location:	Section 16 T. 15 N., R. 14 W., P.M.M.
County:	Powell County

I. TYPE AND PURPOSE OF ACTION

The Montana Department of Natural Resources and Conservation (DNRC) proposes to harvest an estimated 1.5 (one and one half) million board feet (MMBF) of timber from approximately 80 acres. At this time, approximately 0.25 miles of new road could be built to access this area of state trust land. This road would be constructed to standard forest road specifications, and would be gated to restrict access to management uses only. Both the service and log landings would be reclaimed by ripping and planting. Receipts generated by this proposal would yield between an estimated \$50,000 and \$125,000 for the common schools. The proposed harvest treatments would salvage dead and dying Douglas-fir, and open surrounding stands to decrease the likelihood of them being infested by the Douglas-fir bark beetle (*Dendroctonus pseudotsugae*). Area roads and landings would be treated with herbicide to control noxious weeds.

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools & state colleges (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and Department of Natural Resources and Conservation (DNRC) are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 7 –1–202, MCA). In 2003, the DNRC adopted Administrative Rules for Forest Management ARM 36.11.401-36.11.450 (the "Rules"). This project is planned and developed under the Rules. The DNRC would manage the lands involved in this project according to the Rules.

The objectives of the project are to:

- 1) Salvage dead and dying timber before it loses its economic value,
- 2) To not negatively impact resident populations of Threatened, Endangered, and Sensitive species,
- 3) Reduce the susceptibility of residual trees to epidemic insect and disease infestations and outbreaks,
- 4) To not increase water yield and impact water quality,
- 5) Help control the spread of noxious weeds in the project area.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project.

This timber sale was scoped twice (the second scoping was done due to changes within the sale design) in several local newspapers including: Missoulian (Missoula, MT.), Silver State Post (Deer Lodge, MT.), and the Blackfoot Valley Dispatch (Lincoln, MT.) during February and September of 2004. Notices were posted at the Seeley Lake, MT. and Ovando, MT. post offices, both DNRC offices in Clearwater and Lincoln, and other local places such as Trixi's Bar in Ovando, MT. where the public may read the notices. Scoping notices were also sent to all adjoining neighbors (within section 17 T.15 N. R. 14 W.). The normal scoping list was also used to elicit input from the public and other agencies (in Dry Creek Helicopter Salvage sale file). The changes to the original scoping letter include: estimates of harvest volume, and the anticipated implementation and completion dates. The change to the proposed implementation dates was made due mostly to changes in unit personnel and an elevated urgency to prepare other timber sales elsewhere including insect damaged timber. The change to the proposed harvest volume estimate was made due mostly to availability during the interim of more up-to date stand data. Responses from two agencies were received (Montana Department of Fish, Wildlife, and Parks, and the Helena National Forest) and are included within Appendix E. Department of Natural Resources and Conservation specialists such as a wildlife biologist (Mike McGrath), hydrologist and soil scientist (Renee Myers), and archeologist (Patrick Rennie) were also scoped and have provided important information for this Environmental Assessment.

Craig V. Nelson has written the E.A. and Steve Wallace, Unit Manager of Clearwater Unit will be the decision maker.

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

The access to this DNRC section is along a U.S. Forest Service Road (Dry Creek #4106). A temporary right-of-way from the Helena National Forest for use of the road and potentially helicopter log and service landings. This road enters section 16 in the Southeastern corner, and exits after less than 0.25 miles.

Under the Endangered Species Act, the U.S. Department of Fish and Wildlife Service manages the Grizzly Bear populations. These populations are considered “*threatened*” and this proposal is within the Grizzly Bear Recovery Zone.

3. ALTERNATIVES CONSIDERED:

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools & state colleges (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and Department of Natural Resources and Conservation (DNRC) are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 7 –1–202, MCA). In 2003, the DNRC adopted Administrative Rules for Forest Management ARM 36.11.401-36.11.450 (the “Rules”). This project is planned and developed under the Rules.

The Montana D.N.R.C. also is required under the Montana Environmental Policy Act (1971) to consider the effects of pending decisions and ensure that the public is informed of and participates in, the decision making process.

For this project, the Montana D.N.R.C. has determined that an action alternative (described in Part I) and a no-action (no harvest and no man made change to the current existing environment) would suffice. To develop the action alternative, the interdisciplinary staff worked together to achieve most goals, while not breaching any laws or requirements.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter “NONE” if no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.

Geology in the project area is a combination of Glacial deposits (Qg) and pCs Belt Series sedimentary formations, including; argillites, siltites, quartzites, basalts, tuffs, andesites, and breccias.

Soils in the project area are characterized by moderate to deep glacial till derived from quartzite and limestone on the valley floor and footslopes. Soil types are a combination of Typic Ustochrepts-Rock outcrop complex, glacial trough walls and Typic Cryochrepts-Typic Cryoboralfs complex, glaciated mountain slopes (Soil Survey of Helena National Forest Area, Montana).

General Mitigation Measures

Portions of the existing access roads that have inadequate drainage and do not comply with BMP's should have drain-dips or waterbars installed to improve drainage and erosion control based on site-specific plans and as located by forest officer.

All new road construction would meet BMP standards.

Limit hauling operations to periods when soils are relatively dry, frozen or snow covered, to minimize rutting, and maintain drainage features.

Retain a portion of large woody debris and fine slash for nutrient cycling and longterm soil productivity. Consider lop and scatter of concentrated slash as needed or jackpot burning.

All newly disturbed soils at landing sites should be promptly reseeded to site adapted grasses to stabilize roads from erosion and reduce weed encroachment.

For the full report, please see Attachment C, *Watershed and Soils Analysis*. That report will further explain any questions regarding geology and soil quality.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify cumulative effects to water resources.

The analysis area contains one section of State Trust Lands, which is Section 16, T15N, R10 W. Section 16 is located on steep slopes and lies within the middle portion of the drainage on the main stem of Dry Creek. Dry Creek is a Class 1, second order tributary to Rock Creek. Dry Creek is drained by Salmon Creek; an unknown tributary to Dry Creek, two known springs, ephemeral draws and draws with no discernable channel. Ownership in the Dry Creek watershed is a combination of State, Forest Service and Private.

Very steep A2a+ Rosgen stream channel types dominate the upper reaches of Dry Creek in the project area. Most reaches in the State section have stable, well vegetated riparian areas. A large portion of the upper drainage in Forest Service ownership remains undeveloped (about 2000 of the 3600 acres) (e-mail Laura Burns). Most of the 1600 developed acres is now regenerating. In 1988, the Canyon Creek fire burned through the upper headwater portions of Dry Creek. Most of the burned area has revegetated and sediment production from the burned area is minimal.

The confluence of Salmon Creek and Dry Creek form Rock Creek. The lower reaches of Dry Creek, which lose surface flow below the State section have been impacted by cattle grazing resulting in channel instability, including unstable banks, lateral scouring and increased sedimentation. Dewatering due to heavy irrigation has also been an issue in the lower reaches. Numerous stream restoration projects to enhance habitat and restore stream channel functions have been completed on lower sections of Dry Creek by the Fish and Wildlife Service and the Montana Department of Fish Wildlife and Parks.

A watershed analysis was completed by a DNRC hydrologist for the proposed sale area to determine the existing direct, indirect and cumulative effects to water quality, soils, fisheries and noxious weeds.

The project area was evaluated using a coarse filter approach. A fine filter approach, including a water yield analysis was not conducted for this timber sale, due to the anticipated low potential for cumulative impacts.

Under the action alternative, the potential for direct, indirect and cumulative effects to water quality is expected to be minimal. All of the proposed access and haul routes would utilize existing road systems, with the exception of ¼ mile of new spur road. Roads in the project area, which lack adequate road drainage, would be improved to meet minimum BMP standards. There are no roads in the project area located directly adjacent to stream channels, which are at risk of sediment delivery. There is an old road bed located on the north side of the main stem of Dry Creek, which is well vegetated and not at risk for sediment delivery. There is approximately ¼ mile of new road that would be constructed as a spur road to a landing area. The road would be located near the ridge, where no water is present. The risk to water quality are minimal, if any at this location.

Because the proposed action is helicopter, no mechanized equipment is required or allowed within the harvest units. However, to protect water quality a 50 ft no cut buffer would be implemented, as well as restricted harvest between 50 and 100ft. An adequate buffer would provide sediment filtration to minimize sediment delivery to the stream channel, maintain large woody debris potential and provide thermal protection.

All Streamside Laws and Rules would be implemented.

For the full report, please see Appendix C, *Watershed and Soils Analysis*. That report will further explain any questions regarding water quality, quantity, and distribution.

6. AIR QUALITY:

What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.

There will be some influence to local airsheds. Over 70% of the emissions emitted from prescribed burning is less than 2.5 microns (National Ambient Air Quality PM 2.5). High, short-term levels of PM 2.5 may be hazardous. Within the typical column of biomass burning, the chemical toxics are: Formaldehyde, Acrolein, Acetaldehyde, 1,4 Butadiene, and Polycyclic Organic Matter.

Federal, state and local agencies enforce rules for open, controlled burning. The post thinning burning of piled debris would produce particulate matter. All burning would be conducted at times of adequate ventilation and within existing rules, plans, and regulations. Air quality is analyzed by estimating emissions from prescribed burns. The air quality analysis area for the proposed action is located in Montana Airshed 3B. The Montana Airshed Group is responsible for determining both air shed number and impact zones. The project area is not located in any of the impact zones. Given the vicinity of the Bob Marshall and Scapegoat Wildernesses smoke concerns are very high.

Prior to burning be used, a "Prescribed Fire Burn Plan" will be been done for the area.

Cumulative effects to air quality would not exceed the levels defined by State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana Airshed Group. Prescribed burning by other nearby airshed cooperators (for example Plum Creek Timber Company) would have potential to affect air quality. All cooperators currently operate under the same Airshed Group guidelines. The State, as a member, would burn only on approved days. This should decrease the likelihood of additive cumulative effects.

7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation.

No rare plants or cover types listed by the Montana Natural Heritage Program have been identified within the project area.

The analysis area for vegetation cover and quality includes all of section 16, Township 15 North, Range 10 West and adjacent lands within 1 mile of these sections.

Habitat types, local wildfire history, and the presence of charred, woody debris suggest stands within this section experienced a regular wildfire interval at varying intensities and severities. Stands are within the project area are currently older Douglas-fir. Many of the oldest members of the stands are weakening and are showing the stresses of high stocking levels, as are the younger members of the stand in the understory. This has become very visible in the past couple of years as the Douglas-fir bark beetle has attacked and successfully infested the much of the Douglas-fir. What were previously endemic populations of Douglas-fir bark beetle that existed in most stands, have now grown to epidemic levels within portions of section 16 and in surrounding areas.

The silvicultural plan is to remove recently killed Douglas-fir and thin surrounding areas (within 200 feet) of the infested trees. This will remove trees that have been attacked by the Douglas-fir bark beetle, and trees within an area that are highly susceptible to the beetles attack. These areas will be more open than they are currently, however, with the existing rate of infestation, these "openings" will occur within the near future. Trees that have been killed, and show little commercial value, by the Douglas-fir bark beetles will be left as snags for wildlife and aesthetic reasons.

As the attack of these beetles is a natural event, it is conceivable that the sale area has experienced it in the past. It is expected that regeneration would come from the adjoining native stand.

Within this section harvest has occurred during the 1940's and 1950's. Harvesting within the general area has been occurring on the USFS Helena National Forest on the Beaver Dry Timber Sale.

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.

White-tailed deer, mule deer, elk, and moose utilize the area in and around the project area. However, the project area does not contain winter range habitat for these species. These species do, however, utilize the area for forage between late spring and fall. The project area does contain approximately 0.67 mile of closed, brushed in road that would not be utilized during the proposed action. The proposed action may construct approximately 0.25 mile of road that would be closed to motorized activity post-harvest, and would harvest timber on approximately 69 acres dispersed throughout the affected 640 acre School Trust parcel. Thus, because there is no big game winter range habitat within the affected area, no open roads would remain post-harvest, and approximately 10% of the area would be harvested throughout the parcel, there would be low risk of direct, indirect, or cumulative effects to big game as a result of the proposed action.

One of the main pollutants that effect fisheries habitat is sediment. Through the implementation of helicopter logging techniques, the risk of sediment production from soil disturbance is expected to be minimal, reducing the risk of sediment delivery to the stream channel. To protect riparian habitat essential for providing thermal protection, bank stability, large woody debris potential and hiding cover a 50 ft no cut buffer would be required as well as restrictive harvest between 50 and 100ft. This buffer distance should be sufficient to help maintain large woody debris recruitment and help in thermal regulation, as well as provide sediment filtration.

There is no decking or landing areas located near the stream channel or at a distance that would allow any risk of sediment delivery.

For the full report, please see Appendix B, *Wildlife Analysis*. That report will further explain any questions regarding terrestrial and avian life and habitats, and Appendix C, *Watershed and Soils Analysis*. The last report will further explain any questions regarding aquatic life and habitats.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

Grizzly Bears (Federally Threatened)

Grizzly bears are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation. Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi². The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads. Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The project area is located within the Arrastra Mountain Sub-unit of the Northern Continental Divide Ecosystem. This 69,258 acre (108 sq. mi.) sub-unit will serve as the cumulative effects analysis area (hereafter, "analysis area"). Grizzly bears are known to utilize both the project and analysis areas. Within the project area, there is approximately 0.2 miles of open road per square mile (simple linear calculation), and

approximately 0.87 total miles of road per square mile (simple linear calculation). Within the analysis area, there are approximately 60 miles of open road (0.56 miles of open road per square mile, simple linear calculation), and approximately 111 total miles of road (1.03 total miles of road per square mile, simple linear calculation). Within the analysis area, there are 61 acres of water, 1,519 acres of private lands, 1,679 acres of School Trust lands (DNRC), 2,065 acres of Plum Creek Timber lands, and 63,934 acres of USFS land, of which 32,260 acres are in the Scapegoat Wilderness area.

Under the proposed action, approximately 69 acres would be harvested, approximately 0.25 mile of road may be constructed with landings at its terminus, and logs would be transported to the landings via helicopter. Access to the proposed sale for the contractors would be by foot, from the USFS trailhead west of the parcel in Section 17, or from USFS Road 4106 in the SE ¼ of the affected parcel.

With the increased human-presence associated with the proposed timber sale, there would be increased risk of human-grizzly bear (and even black bear) encounters, given the lush Rocky Mountain maple undergrowth, the presence of Dry Creek, and the likelihood that contractors would be bringing food with them into the forest. To reduce the likelihood of negative human-bear encounters, prior to commencement of harvest activities, contractors would be advised of proper sanitation while working in bear country (e.g., double Ziploc bag foods to reduce odors, removal of garbage each day, etc.), and to carry bear spray for protection. Firearms would be prohibited. Additionally, should contractors opt to camp nearby, strict sanitation guidelines would be enforced (e.g., food, garbage, and other attractants would be either hung or stored in bear resistant containers).

As a result of the proposed harvest, forest conditions within the 4 harvest units would be more open, which would promote growth of forest shrubs and forbs, such as huckleberry and snowberry. Because these units are at least 1/8 of a mile from the nearest open road, these temporary forest openings would present low risk to grizzly bears. Thus, because the proposed action would: (1) close any new road construction; (2) yarding would be done via helicopter; (3) sanitation and safety guidelines would be provided to contractors; (4) sanitation restrictions would be implemented in a potential contractor camp; and (5) the distance of the proposed harvest units to open roads, the proposed action would have low risk of direct and indirect effects to grizzly bears.

Within the cumulative effects analysis area, the proposed action would not increase the amount open road, but would temporarily reduce hiding cover on 69 acres for approximately 10 to 20 years, and create a noise disturbance from the helicopter for approximately 1 month during the non-denning period while the proposed action would be implemented. The temporary reduction in hiding cover (a 0.01% reduction in cover within the analysis area) and temporary disturbance from helicopter logging would be expected to have a minimal increase in cumulative effects to grizzly bears.

Canada Lynx (Federally Threatened)

Lynx are currently classified as threatened in Montana under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Consequently, lynx foraging habitat follows the predominant snowshoe hare habitat, early- to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest. For denning sites, the primary component appears to be large woody debris, in the form of either down logs or root wads. These den sites may be located in regenerating stands that are >20 years post-disturbance, or in mature conifer stands.

Elevation within the project area ranges between 4600 and 6080 feet. There are approximately 144 acres of mature foraging habitat and approximately 348 acres of "other" lynx habitat (i.e., lands in lynx habitat that do not meet definitions for young or mature foraging, denning, or temporary non-lynx habitat, but serve to provide cover to facilitate movement and acquisition of alternative prey species). In a 2-mile radius surrounding the project area (i.e., the cumulative effects analysis area), there are at least 3,000 acres of potential lynx habitat on School Trust and USFS lands.

The proposed action would harvest approximately 60 acres of habitat currently classified as "Other" for lynx within the project area. Such habitat provides cover for lynx movement, and enables the acquisition of secondary prey, such as red squirrels. However, post-harvest, there would still be 144 acres of mature foraging habitat and approximately 288 acres of "Other" habitat for lynx. The proposed harvest would likely temporarily set back the 60 acres of Other habitat that would be affected. As a result, these acres may not provide foraging opportunities on red squirrels for 50 to 60 years post-harvest. Nonetheless, 432 acres of lynx habitat would remain unchanged post-harvest. With the proposed action likely being a fall harvest, there would be low risk of noise from the helicopter disrupting denning activities. Additionally, with the use of a helicopter for yarding activities, and closure of any new road construction, there should be low risk of increased interspecific competition from other predators as a result of the proposed action. As a result, there would be low risk of direct and indirect effects to lynx from the proposed action alternative.

The proposed action would harvest approximately 69 acres of timber, affecting approximately 60 acres of lynx habitat, out of the minimum of 3,000 acres of lynx habitat within the analysis area (i.e., < 2% of lynx habitat). As described under Direct and Indirect Effects, the proposed action would likely temporarily (50 to 60 years) delay the availability of red squirrels, a secondary prey species for the lynx, on the affected 60 acres. Additionally, because the proposed action would utilize a helicopter for yarding logs, and would close any new road construction post-harvest, there would be low risk of increased interspecific competition from other predators. Thus, there would likely be minimal risk of negative cumulative effects to lynx as a result of the proposed action.

Pileated Woodpecker (Sensitive)

The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae. The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands. Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana. Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year. Snags used for roosting are slightly smaller, averaging 27 inches dbh. Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches. Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

The project area is predominantly in the Douglas-fir/snowberry and subalpine fir/queencup beadlely habitat types, with 380 acres having an average stand diameter ≥ 15 inches dbh (Stand Level Inventory database). Canopy closure is generally in excess of 60% throughout the project area. Thus, much (i.e., 380 acres) of the affected parcel could be considered suitable pileated woodpecker habitat. Within the proposed harvest units, there are an average of 13.7 snags per acre ≥ 15 inches DBH, and an average of 7 snags per acre ≥ 21 inches DBH (Fig. 1). The cumulative effects analysis area encompasses a 1-mile radius surrounding the project area.

The proposed action would harvest approximately 69 acres of timber, distributed throughout the 627 acre School Trust parcel, that are currently being affected by Douglas-fir beetle. The proposed harvest would remove live, dead, and dying trees throughout the 4 harvest units across all size classes. Examining the cruise data, the proposed action would remove the live trees ≥ 25 inches dbh, while retaining a reduced stocking between 12 and 24 inches dbh, that should provide for future large diameter trees (i.e., ≥ 25 inches dbh). The intention behind the proposal is to reduce stocking levels in the size classes that are most susceptible to insect infestation.

For potential nesting and roosting substrate, sampling shows that there are currently an average of 13.7 snags per acre ≥ 15 inches dbh, and an average of 7 snags per acre ≥ 21 inches dbh. The proposed action would reduce these snag densities to an average of 1.6 snags per acre ≥ 21 inches dbh (as per cruise data from the 4 proposed harvest units), eliminating snags between 15 and 20 inches dbh. Granted, sampling efficiency of the timber cruise may have missed snags in these size classes, thus, the post-harvest snag retention levels may be underrepresented. However, such action would reduce the availability of potential nesting and roosting habitat within the project area. Thus, there would be low risk of direct, indirect, or cumulative effects to pileated woodpeckers within the project area from the proposed action.

Fisher (Sensitive)

The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas. For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground.

Within a 1-mile radius of the project area, there are at least 395 acres of fisher preferred habitat types on School Trust parcels and national forest lands (Helena National Forest data unavailable). Of these acres, approximately 41 acres occur within the project area, and approximately 37 acres would be considered under the proposed harvest.

This would require approximately 50 to 60 years to re-establish through natural revegetation and structural development of the site. However, based upon the relatively natural state of the remainder of the parcel, other habitat, particularly that along Dry Creek, may provide additional habitat for fishers. Given that there are no recent observations of fisher in the Lewis and Clark Range, fishers may have colonized from adjacent mountain ranges since 1988. Thus, there would likely be a low risk of direct and indirect effects to fisher as a result of the proposed action. There would be low risk of cumulative effects to fisher because the proposed action would not: (1) fragment said habitat; (2) interrupt travel corridors; or (3) increase habitat fragmentation in an already fragmented environment. The affected fisher habitat is largely on USFS land, and within 1.5 miles of the Scapegoat Wilderness area. Thus, fisher habitat within the analysis area is relatively well protected from anthropogenic disturbance.

Flammulated Owl (Sensitive)

The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. Nest trees in 2 Oregon studies were 22-28 inches dbh. Habitats used have open to moderate canopy closure (30 to 50%) with at least 2 canopy layers, and are often adjacent to small clearings. It subsists primarily on insects and is considered a sensitive species in Montana. Periodic underburns may contribute to increasing habitat suitability for flammulated owls because low intensity fires would reduce understory density of seedlings and saplings, while periodically stimulating shrub growth. Within the project area there are approximately 272 acres of flammulated owl preferred habitat types. Of these acres, approximately 62 acres would be considered under the proposed harvest.

The proposed action would harvest timber on approximately 69 acres, reducing the availability of larger diameter snags for nesting by flammulated owls. However, the proposed harvest would also increase the potential for development of a shrub layer, and eventually, thickets of regeneration that would provide habitat for flammulated owl prey. Though, sparse snags that could serve as potential nesting structures may not be able to fully capitalize on more abundant prey habitat. Thus, there may be low risk of direct and indirect effects to flammulated owls as a result of the proposed action. Because there has been very little historic human-induced habitat change within the affected parcel, there would be minimal risk of cumulative effects to this species as a result of the proposed action.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine effects to historical, archaeological or paleontological resources.

The Montana D.N.R.C. archeologist reported that there are not any cultural resources on file for this state parcel, and no further investigation was needed.

11. AESTHETICS:

Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.

The proposed sale would be partially visible from the valley floor (Kleinschmidt Flat). Only portions of the harvest units would be visible from the valley floor due to areas being blocked from view by topography. By using a helicopter to yard harvested trees, there would not be road cuts across the steep side slopes where the units are. The removal of the Douglas-fir bark beetle attacked trees and existing snags (trees attacked in previous years) would be barely changed in the distant view from the valley floor. The general unit design would emulate natural patterns that are currently in place (Douglas-fir bark beetle attacked patches within the forest). The general view from the valley floor would

be changed over the long-term, and would be noticed by the absence of tree crowns. There would be a change to a lighter color that is expected when you can see the forest floor.

These above areas would not be visible from the Dry Creek Road (USFS #4106), but other areas, hidden by topography from the valley floor, would be. These unit portions would be in the middleground viewing from the road, and more detail can be seen. At this distance, slash from the harvest would be noticeable, but this is only a temporary impact to the viewshed. Generally slash disappears from the site within five years, and is often covered by other vegetation within three years. Again, sites would be generally lighter in color than can be seen currently.

For all units, the landings the helicopter uses, and the need for log trucks to haul the logs away from the landings, may cause temporary dust clouds that will quickly disperse and would only occur during harvest.

During harvest, the helicopter used would be quite audible. Depending upon air conditions, helicopters can be heard many miles from their location. Although this does occur, the harvest of this volume would most likely be done within a few weeks and would be temporary in nature.

If the no-action alternative is selected, these patches will generally still exist (potentially more or less acreage given the insect outbreak timeline). The trees that would be killed by the beetle attack would lose all foliage, and eventually branches (over several years). Although the tree bole would still be in existence, this would not be very apparent in the distance, but would be more easily seen within the middleground viewshed. As was explained in the previous paragraphs, the color would be lighter than the current view after the attacked trees die.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.

None. There are no demands by this project on environmental resources of land, water, air, or energy.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

Clearwater River Timber Sales, Seeley Salvage II, Lost Bear Timber Sale, Evans Lake Timber Sale, Golden Arches Timber Sale, Headquarters Timber Sale, Haywire Wallace Timber Sale, Cool Flat 4x4 Timber Sale, Beaver Dry Timber Sale (USFS Helena).

IV. IMPACTS ON THE HUMAN POPULATION

- | |
|--|
| <ul style="list-style-type: none">• <i>RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.</i>• <i>Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.</i>• <i>Enter "NONE" if no impacts are identified or the resource is not present.</i> |
|--|

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

None. No risks to human health and safety are known as part of this project.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

Identify how the project would add to or alter these activities.

This proposed project would capitalize on timber resources that would otherwise be lost after being attacked by the Douglas-fir bark beetle. As part of MCA 77-5-207, the DNRC is required to consider long-term costs to all forest resources that could be controlled through salvage operations. It is also stated that the DNRC will not let the salvage operations take precedence over the timely sale and harvest of green timber. The salvage of material must be done prior to substantial loss of value or material. Given these requirements, the DNRC must ensure that harvest is economically feasible. This projected harvest volume is fairly minor (estimated at 10%) as compared to the board foot volume within this section given stand level inventory. This project would not decrease the opportunity to perform future harvest in the area.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.

None. A few short-term jobs in the local area may be created for the duration of the proposed action.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.

None. The proposed action has only indirect, limited implications for tax collections.

18. DEMAND FOR GOVERNMENT SERVICES:

Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services

None. Aside from contract administration, the impact on government services should be minimal due to the temporary nature of the proposed action.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

None. The DNRC is currently working on an HCP for several terrestrial and aquatic species. Currently, the DNRC uses the Administrative Rules for Forest Management.

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness activities.

The project area is adjacent (within one mile) to the Scapegoat Wilderness. There is a USFS trail, #483, which passes north of the northwest section corner of this section. The project area receives use by walk-in recreationists. Recreation opportunities would continue under the proposed action

Currently the USFS Helena National Forest has a timber sale within the area. Neither timber sale will impact the wilderness area, the nearby trail, or recreational access.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.

None. The project has no direct implications for density and distribution of population and housing.

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

None. The proposed action has no direct implications for social structures and mores.

23. CULTURAL UNIQUENESS AND DIVERSITY:

How would the action affect any unique quality of the area?

None. The proposed project has no direct implications for cultural uniqueness and diversity.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.

This project should yield between an estimated \$50,000 and \$125,000 for the common schools. This is calculated by multiplying the expected volume of sawlog and the amount paid to the DNRC (not including forest improvement fees). As stated before, the DNRC assumes the volume total will be upwards of 1.5 MMBF. Given past sales on Clearwater Unit, one could assume that this volume of sawlog would weigh approximately 10,125 tons. Past sales on the Clearwater Unit (Golden Arches and Evans Lake Timber Sales) have sold for stumpage prices (paid to the DNRC) over \$40.00 per ton. These two sales will use standard logging equipment (skidder, feller bunchers, etc.) to harvest and yard the material to landings. The Dry Creek Helicopter Salvage sale will use helicopter yarding. Although environmentally sensitive, it has a very high cost. Comparatively, helicopter yarding is quite expensive (\$49.00 per ton) in comparison to the standard ground based (\$26.00 per ton) or cable yarding (\$30.00 per ton) equipment. The off highway truck haul route is also much longer, and will be a cost that the purchaser will include in their bid. Past sales have averaged haul rates of \$4.00 per ton along a similar haul route. Road building needs and use costs on haul routes for all three sales are comparable, and could be estimated at \$1.50 per ton. Recently, log

delivery prices at area mills have paid around \$70.00/ ton, however the real price per ton is often held as a company secret. To arrive at a base stumpage rate, you must begin with money paid at the mill and subtract all other costs. In this case, delivered price is \$70.00 per ton. You then subtract helicopter logging cost to the truck (\$49.00 per ton), the hauling cost (\$4.00 per ton), and the appraised sale costs (\$1.50 per ton). The last cost needed is the forest improvement charges paid to the DNRC.

The money collected for forest improvement projects would be around \$6.81 per ton. This should return approximately \$68,951.25 for forest improvement uses. Forest improvement projects include planting, thinning, burning, etc. on School Trust Land.

Given these number for estimation, the estimated "stumpage" paid to the DNRC is \$8.69 per ton. This would equate to a total amount of money paid to the Common School Trust of \$87,986.25. Given that markets change, the cost of diesel and aviation fuel changes, and the softwood supply can change, it is believable that the money received by the Trust could be more or less than the \$87,986.25 estimated.

The DNRC has estimated 3 weeks at 40 hours per week for all preparatory sale layout duties, 2 weeks of work for preparing this EA and the contract, and 3 weeks of administration time. That equates to 320 hours of work time. Given a total cost to the DNRC of \$25.00 per hour (including pay, insurance, vehicle, etc.) the man time cost is \$8,000.00. This shows a profit of nearly \$80,000.00 given the previous estimate.

EA Checklist Prepared By:	Name: Craig V. Nelson	Date: January 5, 2005
	Title: Supervisory Forester, Clearwater State Forest, SWLO	

V. FINDING

25. ALTERNATIVE SELECTED:

ACTION ALTERNATIVE

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

This Environmental Analysis has been completed for the Dry Creek Helicopter Salvage Timber Sale. After a thorough review of the EA, project file, response to both scoping letters, Department policies, standards and guidelines, and the State Land Management Rules, I have taken the decision to choose the action alternative. I have found that this EA and project will:

This project will salvage dead and dying timber before it loses its economic value. This is explained in EA part 15 *Industrial, Commercial, and Agriculture Activities and Production*, EA part 24 *Other Appropriate Social and Economic Issues*, and is required by law in MCA 77-5-207.

This project will not negatively impact resident populations of Threatened, Endangered, and Sensitive species. This is explained in EA part 9 *Unique, Endangered, Fragile or Limited Environmental Resources*, and DNRC must comply with the accepted State Forest Land Management Rules.

This project will reduce the susceptibility of residual trees to epidemic insect and disease infestations and outbreaks. This is explained in EA part 7 *Vegetation Cover, Quantity, and Quality*.

This project will not increase water yield and impact water quality. This is described in EA part 5 *Water Quality, Quantity, and Distribution*.

This project will help control the spread of noxious weeds in the project area. This information is found in **Appendix C Watershed and Soils Analysis**, part 4.3.2.4 *Noxious Weeds*.

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

☐ EIS ☐ More Detailed EA ☒ No Further Analysis

EA Checklist Approved By:	Name: Stephen J. Wallace
	Title: Unit Manager, Clearwater State Forest, SWLO
Signature:	Date:

September 23, 2004

Initial Proposal
Dry Creek Helicopter Salvage Sale

The Montana Department of Natural Resources and Conservation, Clearwater Unit, is proposing a timber sale on State – owned portions of the following school trust lands.

Section 16
T.15 N., R.10 W., M.P.M.

The primary objective of this proposal is to harvest Douglas fir that has been, and will be, infested with the Douglas-fir bark beetle. This would be done in a manner consistent with the Montana D.N.R.C.'s mandate to produce revenue for the school trust. All actions taken would be in accordance with the Enabling Act, the Montana Environmental Policy Act and the State Forest Management Plan. Beetle killed and beetle infested trees will be cut, and trees within 200 feet may be thinned to reduce the potential spread of the beetle population. Dead trees that no longer can be turned into wood products would be marked as wildlife trees. This section has been included within a possible land exchange.

The area is known to provide habitat for White-tailed and Mule deer, Elk, Moose, Mountain Lion, Black and Grizzly Bears. It is part of a Grizzly Bear Management Unit and protective measures to fulfill the Endangered Species Act will be used. This proposal is in the general vicinity of Cooper's Lake and Kleinschmidt Flat near Ovando.

There may be a need to construct approximately 0.25 miles of roads to access potential landing sites for the helicopter. The acreage cleared for these landings may be as much as 3 acres. The potential road accessing these landings would be closed to public vehicle use and the proposed landings would be planted with suitable tree seedlings. This proposed sale could harvest up to one and one half million board feet of timber. The proposed action may be implemented in 2005 and may be finished by 2006.

In preparation for this timber sale, specialists such as wildlife biologists, hydrologists, soil scientists, and archeologists will be consulted.

The Montana D.N.R.C. invites comments and suggestions concerning this proposal from all interested parties. Please respond by October 25, 2004.

Route all responses to:

Craig V. Nelson
Department of Natural Resources and Conservation
Clearwater Unit
48455 Sperry Grade Road
Greenough, MT.
59823-9635

or: crnelson@state.mt.us
or: (406) 244-5857

7 December 2004

Michael McGrath, SWLO
Wildlife Biologist

Dry Creek Helicopter Timber Sale Wildlife Analysis

1 Chapter 1: Purpose and Need for Action

1.10 Issues

1.10.1 Wildlife

1.10.1.1 Endangered Species Issue

The proposed project, if implemented, may negatively impact bald eagles, grizzly bears, gray wolves, and lynx.

1.10.1.2 Sensitive Species Issue

The proposed project, if implemented, may negatively impact sensitive species.

1.10.1.3 Big Game Issue

The proposed project, if implemented, may negatively impact mule and white-tailed deer, elk, and moose.

1.10.2 Issues Eliminated from Further Study

1.10.2.1 Bald Eagle (Federally Threatened)

There is concern that timber harvest activities would alter bald eagle habitat or provide unnecessary disturbance. The project area and haul route are approximately 7.1 miles, and 3.4 miles east, respectively, of the nearest known bald eagle nest. Thus, due to the distance between the nest and project area, there would be low risk of direct, indirect, or cumulative effects to bald eagles as a result of the proposed action.

1.10.2.2 Gray Wolf (Federally Threatened)

There is concern that timber harvest activities would provide unnecessary disturbance to gray wolves. The project area is approximately 17 miles NW of the Halfway Pack, located SE of Helmville, MT, and approximately 20 miles east of the Blanchard Creek pack, located near Clearwater Junction. Thus, due to the distance between the packs and project area, there would be low risk of direct, indirect, or cumulative effects to gray wolves as a result of the proposed action.

1.10.2.3 Peregrine Falcon

There is concern that timber harvest activities would alter peregrine falcon habitat or provide unnecessary disturbance. The project area is approximately 38 miles west of the nearest known peregrine falcon nest. Thus, due to the distance between the nest and project area, there would be low risk of direct, indirect, or cumulative effects to peregrine falcons as a result of the proposed action.

1.10.2.4 Black-backed Woodpecker

There is concern that timber harvest activities would alter black-backed woodpecker habitat or provide unnecessary disturbance. The project area is approximately 4.75 miles west of the 32,592 acre Snow Talon fire, and approximately 10 miles north of the 1,650 acre Moose-Wasson Fire, both from the 2003 fire season. Thus, due to the distance between black-backed woodpecker habitat and project area, there would be low risk of direct, indirect, or cumulative effects to black-backed woodpeckers as a result of the proposed action.

1.10.2.5 Harlequin Duck

There is concern that timber harvest activities would alter harlequin duck habitat or provide unnecessary disturbance. The project area is approximately 5.8 miles SE (i.e., downstream) of the nearest known harlequin duck nest. Thus, due to the distance between the nest and project area, there would be low risk of direct, indirect, or cumulative effects to harlequin ducks as a result of the proposed action.

1.10.2.6 Common Loon

There is concern that timber harvest activities would alter loon habitat or provide unnecessary disturbance. The project area is approximately 2 miles east of the nearest known loon nest. However, both the project area and haul route would not be connected by waterway or be within close enough proximity to provide disturbance to nesting loons. Thus, due to the distance between the nest and project area, there would be low risk of direct, indirect, or cumulative effects to loons as a result of the proposed action.

1.10.2.7 Townsend's Big-eared Bat

There is concern that timber harvest activities would alter Townsend big-eared bat habitat or provide unnecessary disturbance. The project area is approximately 3 miles south of the nearest known mine shaft. Current conservation strategies for this species indicate that a 500-ft radius buffer be installed around mine entrances to partially mitigate for the effects of timber harvest (Pierson et al. 1999). Thus,

due to the distance between potential habitat and project area, there would be low risk of direct, indirect, or cumulative effects to this species as a result of the proposed action.

1.10.2.8 Coeur d'Alene Salamander

There is concern that timber harvest activities could affect this species. This species requires waterfall spray zones, talus, or cascading streams. There are no known areas of waterfalls, or splash zones within the affected area. Thus, the proposed action would have low risk of direct, indirect, or cumulative effects to this species.

1.10.2.9 Northern Bog Lemming

There is concern that timber harvest activities could affect this species. The sphagnum meadows, bogs or fens with thick moss mats required by this species are not present within the harvest area. Thus, the proposed action would have low risk of direct, indirect, or cumulative effects to this species.

1.10.2.10 Mountain Plover

There is concern that timber harvest activities could affect this species. The short-grass prairie habitats required by this species are not present within the harvest area. Thus, the proposed action would have low risk of direct, indirect, or cumulative effects to this species.

1.10.2.11 Columbian Sharp-tailed Grouse

There is concern that timber harvest activities could affect this species. One of two known populations of Columbian sharp-tailed grouse is known to reside in the vicinity south and west of Kleinschmidt and Browns Lakes, which are located approximately 9 miles southwest of the project area. The nearest known lek, or breeding display ground, is located approximately 11.5 miles southwest of the project area. (Deeble 1996), in a summation of previous research, indicated that most nests are located within approximately 3 km (1.9 miles) of the lek, with most females nesting within 1 mile of the lek where they were trapped. During summer, 90% of most male and female locations are within 1.6 miles of the lek where they were captured (Giesen and Connelly 1993). However, during the last lek survey in 2000, only 1 displaying male was observed at the Browns Lake lek (B. Deeble, National Wildlife Federation, pers. comm. May 2003). Additionally, recent observations of the region surrounding the proposed haul route (north of Hwy. 200) did not yield observations of Columbian sharp-tailed grouse (B. Henderson, MT FWP, pers. comm. June 2004). Thus, the proposed action would have low risk of direct, indirect, or cumulative effects to this species.

1.10.2.12 Big Game

White-tailed deer, mule deer, elk, and moose utilize the area in and around the project area. However, the project area does not contain winter range habitat for these species. These species do, however, utilize the area for forage between late spring and fall. The project area does contain approximately 0.67 mile of closed, brushed in road that would not be utilized during the proposed action. The proposed action may construct approximately 0.25 mile of road that would be closed to motorized activity post-harvest, and would harvest timber on approximately 69 acres dispersed throughout the affected 640 acre School Trust parcel. Thus, because there is no big game winter range habitat within the affected area, no open roads would remain post-harvest, and approximately 10% of the area would be harvested throughout the parcel, there would be low risk of direct, indirect, or cumulative effects to big game as a result of the proposed action.

3 Chapter 3: Affected Environment

3.2 Description of Relevant Affected Resources

3.2.1 Wildlife

3.2.1.1 Threatened and Endangered Species Existing Conditions

3.2.1.1.1 Grizzly Bear (Federally Threatened)

Grizzly bears are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi² (Waller and Mace 1997). The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads (Kasworm and Manley 1990). Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The project area is located within the Arrastra Mountain Sub-unit of the Northern Continental Divide Ecosystem. This 69,258 acre (108 sq. mi.) sub-unit will serve as the cumulative effects analysis area (hereafter, "analysis area"). Grizzly bears are known to utilize both the project and analysis areas. Within the project area, there is approximately 0.2 miles of open road per square mile (simple linear calculation), and approximately 0.87 total miles of road per square mile (simple linear calculation). Within the analysis area, there are approximately 60 miles of open road (0.56 miles of open road per

square mile, simple linear calculation), and approximately 111 total miles of road (1.03 total miles of road per square mile, simple linear calculation). Within the analysis area, there are 61 acres of water, 1,519 acres of private lands, 1,679 acres of School Trust lands (DNRC), 2,065 acres of Plum Creek Timber lands, and 63,934 acres of USFS land, of which 32,260 acres are in the Scapegoat Wilderness area.

3.2.1.1.2 Canada Lynx (Federally Threatened)

Lynx are currently classified as threatened in Montana under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Consequently, lynx foraging habitat follows the predominant snowshoe hare habitat, early - to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest. For denning sites, the primary component appears to be large woody debris, in the form of either down logs or root wads (Squires and Laurion 2000, Mowat et al. 2000, Koehler 1990). These den sites may be located in regenerating stands that are >20 years post-disturbance, or in mature conifer stands (Ruediger et al. 2000, Koehler 1990).

Elevation within the project area ranges between 4600 and 6080 feet. There are approximately 144 acres of mature foraging habitat and approximately 348 acres of "other" lynx habitat (i.e., lands in lynx habitat that do not meet definitions for young or mature foraging, denning, or temporary non-lynx habitat, but serve to provide cover to facilitate movement and acquisition of alternative prey species). In a 2-mile radius surrounding the project area (i.e., the cumulative effects analysis area), there are at least 3,000 acres of potential lynx habitat on School Trust and USFS lands.

3.2.1.2 Sensitive Species

3.2.1.2.1 Pileated Woodpecker

The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (McClelland et al. 1979, Bull et al. 1992) (McClelland et al. 1979). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

The project area is predominantly in the Douglas-fir/snowberry and subalpine fir/queencup beadlely habitat types, with 380 acres having an average stand diameter \geq 15 inches dbh (Stand Level Inventory database). Canopy closure is generally in excess of 60% throughout the project area. Thus, much (i.e., 380 acres) of the affected parcel could be considered suitable pileated woodpecker habitat. Within the proposed harvest units, there are an average of 13.7 snags per acre \geq 15 inches DBH, and an average of 7 snags per acre \geq 21 inches DBH (Fig. 1). The cumulative effects analysis area encompasses a 1-mile radius surrounding the project area.

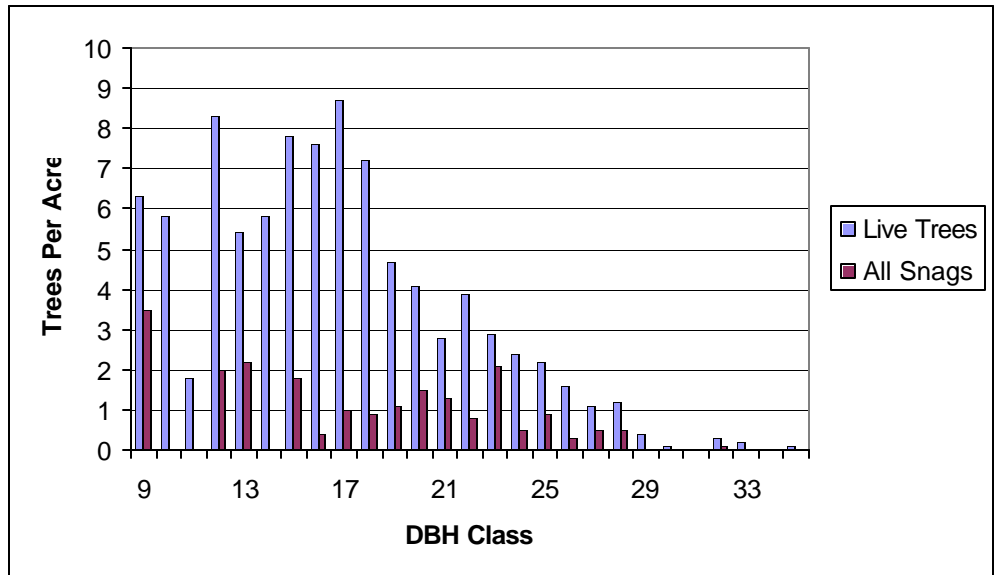


Figure 1. Average trees and snags per acre by diameter class, within the Dry Creek proposed harvest units.

3.2.1.2.2 Fisher

The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas (Powell 1978, Powell 1978, Powell 1977, Kelly 1977, Powell 1977, Kelly 1977, Clem 1977, Coulter 1966, Coulter 1966). For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground (Coulter 1966, Powell 1977).

Within a 1-mile radius of the project area, there are at least 395 acres of fisher preferred habitat types on School Trust parcels and national forest lands (Helena National Forest data unavailable). Of these acres, approximately 41 acres occur within the project area, and approximately 37 acres would be considered under the proposed harvest.

3.2.1.2.3 Flammulated Owl

The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. Nest trees in 2 Oregon studies were 22-28 inches dbh (McCallum 1994). Habitats used have open to moderate canopy closure (30 to 50%) with at least 2 canopy layers, and are often adjacent to small clearings. It subsists primarily on insects and is considered a sensitive species in Montana. Periodic underburns may contribute to increasing habitat suitability for flammulated owls because low intensity fires would reduce understory density of seedlings and saplings, while periodically stimulating shrub growth. Within the project area there are approximately 272 acres of flammulated owl preferred habitat types. Of these acres, approximately 62 acres would be considered under the proposed harvest.

4 Chapter 4: Environmental Consequences

4.3 Predicted Effects on Relevant Resources of All Alternatives

4.3.1 Wildlife

4.3.1.1 Threatened and Endangered Species

4.3.1.1.1 Grizzly Bear

4.3.1.1.1.1 No Action Alternative: Direct and Indirect Effects

Under the no action alternative, the current beetle infestation would continue to grow and affect additional trees. Under this scenario, it could be possible that DNRC would propose a larger timber sale that would require the construction of additional roads to access timber. Such roads would most likely be gated and locked at the completion of the potential timber sale. As a result, there would be low to moderate risk of direct and indirect effects to grizzly bears as a result of the no action alternative.

4.3.1.1.1.2 No Action Alternative: Cumulative Effects

Under the no action alternative, there would be a continued risk of the beetle infestation spreading. As a result, affected timber may be salvaged on School Trust and private lands within the analysis area. Such action might require construction of additional roads. However, vegetative change may result in increased shrub and forb development that would provide grizzly bears with additional forage. Thus, there would be low risk of cumulative effects to grizzly bears as a result of the no action alternative.

4.3.1.1.1.3 Action Alternative: Direct and Indirect Effects

Under the proposed action, approximately 69 acres would be harvested, approximately 0.25 mile of road may be constructed with landings at its terminus, and logs would be transported to the landings via helicopter. Access to the proposed sale for the contractors would be by foot, from the USFS trailhead west of the parcel in Section 17, or from USFS Road 4106 in the SE ¼ of the affected parcel.

With the increased human-presence associated with the proposed timber sale, there would be increased risk of human-grizzly bear (and even black bear) encounters, given the lush Rocky Mountain maple undergrowth, the presence of Dry Creek, and the likelihood that contractors would be bringing food with them into the forest. To reduce the likelihood of negative human-bear encounters, prior to commencement of harvest activities, contractors would be advised of proper sanitation while working in bear country (e.g., double Ziploc bag foods to reduce odors, removal of garbage each day, etc.), and to carry bear spray for protection. Firearms would be prohibited. Additionally, should contractors opt to camp nearby, strict sanitation guidelines would be enforced (e.g., food, garbage, and other attractants would be either hung or stored in bear resistant containers).

As a result of the proposed harvest, forest conditions within the 4 harvest units would be more open, which would promote growth of forest shrubs and forbs, such as huckleberry and snowberry. Because these units are at least 1/8 of a mile from the nearest open road, these temporary forest openings would present low risk to grizzly bears. Thus, because the proposed action would: (1) close any new road construction; (2) yarding would be done via helicopter; (3) sanitation and safety guidelines would be provided to contractors; (4) sanitation restrictions would be implemented in a potential contractor camp; and (5) the distance of the proposed harvest units to open roads, the proposed action would have low risk of direct and indirect effects to grizzly bears.

4.3.1.1.1.4 Action Alternative: Cumulative Effects

Within the cumulative effects analysis area, the proposed action would not increase the amount open road, but would temporarily reduce hiding cover on 69 acres for approximately 10 to 20 years, and create a noise disturbance from the helicopter for approximately 1 month during the non-denning period while the proposed action would be implemented. The temporary reduction in hiding cover (a 0.01% reduction in cover within the analysis area) and temporary disturbance from helicopter logging would be expected to have a minimal increase in cumulative effects to grizzly bears.

4.3.1.1.2 Canada Lynx

4.3.1.1.2.1 No Action Alternative: Direct and Indirect Effects

Under the no action alternative, the current beetle infestation would continue to grow and affect additional trees. Under this scenario, it could be possible that DNR would propose a larger timber sale that would require the construction of additional roads to access timber. Such roads would most likely be gated and locked at the completion of the potential timber sale. As a result, there would be low to moderate risk of direct and indirect effects to lynx as a result of the no action alternative.

4.3.1.1.2.2 No Action Alternative: Cumulative Effects

Under the no action alternative, there would be a continued risk of the beetle infestation spreading. As a result, affected timber may be salvaged on School Trust and private lands within the analysis area. Such action might result in the temporary loss of lynx foraging and denning habitat. Additionally, there may be an increase in potential denning habitat on USFS lands, should the beetle infestation spread: beetles would kill additional trees, resulting in an increased number of snags, over time, these snags would fall and potentially create den sites for lynx. Thus, there would be low risk of cumulative effects to lynx as a result of the no action alternative.

4.3.1.1.2.3 Action Alternative: Direct and Indirect Effects

The proposed action would harvest approximately 60 acres of habitat currently classified as "Other" for lynx within the project area. Such habitat provides cover for lynx movement, and enables the acquisition of secondary prey, such as red squirrels. However, post-harvest, there would still be 144 acres of mature foraging habitat and approximately 288 acres of "Other" habitat for lynx. The proposed harvest would likely temporarily set back the 60 acres of Other

habitat that would be affected. As a result, these acres may not provide foraging opportunities on red squirrels for 50 to 60 years post-harvest. Nonetheless, 432 acres of lynx habitat would remain unchanged post-harvest. With the proposed action likely being a fall harvest, there would be low risk of noise from the helicopter disrupting denning activities. Additionally, with the use of a helicopter for yarding activities, and closure of any new road construction, there should be low risk of increased interspecific competition from other predators as a result of the proposed action. As a result, there would be low risk of direct and indirect effects to lynx from the proposed action alternative.

4.3.1.1.2.4 Action Alternative: Cumulative Effects

The proposed action would harvest approximately 69 acres of timber, affecting approximately 60 acres of lynx habitat, out of the minimum of 3,000 acres of lynx habitat within the analysis area (i.e., < 2% of lynx habitat). As described under Direct and Indirect Effects, the proposed action would likely temporarily (50 to 60 years) delay the availability of red squirrels, a secondary prey species for the lynx, on the affected 60 acres. Additionally, because the proposed action would utilize a helicopter for yarding logs, and would close any new road construction post-harvest, there would be low risk of increased interspecific competition from other predators. Thus, there would likely be minimal risk of negative cumulative effects to lynx as a result of the proposed action.

4.3.1.2 Sensitive Species

4.3.1.2.1 Pileated Woodpecker

4.3.1.2.1.1 No Action Alternative: Direct and Indirect Effects

Under the no action alternative, the beetle infestation would continue to spread, creating additional large diameter snags while simultaneously reducing canopy closure. Examining the cruise data from the proposed harvest units (see Fig. 1 in Chapter 3), it is evident that the majority of trees within at least the proposed harvest units are between 12 and 19 inches dbh. Based on infestation risk, it is those trees ≥ 12 inches dbh that are most susceptible to beetle infestation. As these are also the trees providing canopy closure that would create suitable stand conditions for pileated woodpeckers, loss of these live trees to beetles, while they would create snags, would reduce the suitability of the stands for nesting. Granted, using cruise data from the proposed harvest units (representing only 69 acres) may present a biased representation of the entire parcel, given that these same stands were likely the most susceptible to beetle infestation. Nonetheless, while the no action alternative may create an abundance of snags on which pileated woodpeckers could feed, the alternative also increases the risk of losing potential nesting habitat due to the likely reduction in canopy closure.

4.3.1.2.1.2 No Action Alternative: Cumulative Effects

Through the no action alternative, the beetle infestation would likely grow to affect forested stands on USFS land within the analysis area. Similar to the discussion under Direct and Indirect effects (4.3.1.2.1.1), there would be an increased availability of larger diameter snags within the analysis area, however, there would be corresponding decreases in canopy closure that may negatively effect nesting habitat suitability for pileated woodpeckers. Thus, there would be a low risk of cumulative effects to pileated woodpeckers as a result of the no action alternative.

4.3.1.2.1.3 Action Alternative: Direct and Indirect Effects

The proposed action would harvest approximately 69 acres of timber, distributed throughout the 627 acre School Trust parcel, that are currently being affected by Douglas-fir beetle. The proposed harvest would remove live, dead, and dying trees throughout the 4 harvest units across all size classes (Fig. 2). Examining the cruise data (Fig. 2), the proposed action would remove the live trees ≥ 25 inches dbh, while retaining a reduced stocking between 12 and 24 inches dbh, that should provide for future large diameter trees (i.e., ≥ 25 inches dbh). The intention behind the proposal is to reduce stocking levels in the size classes that are most susceptible to insect infestation.

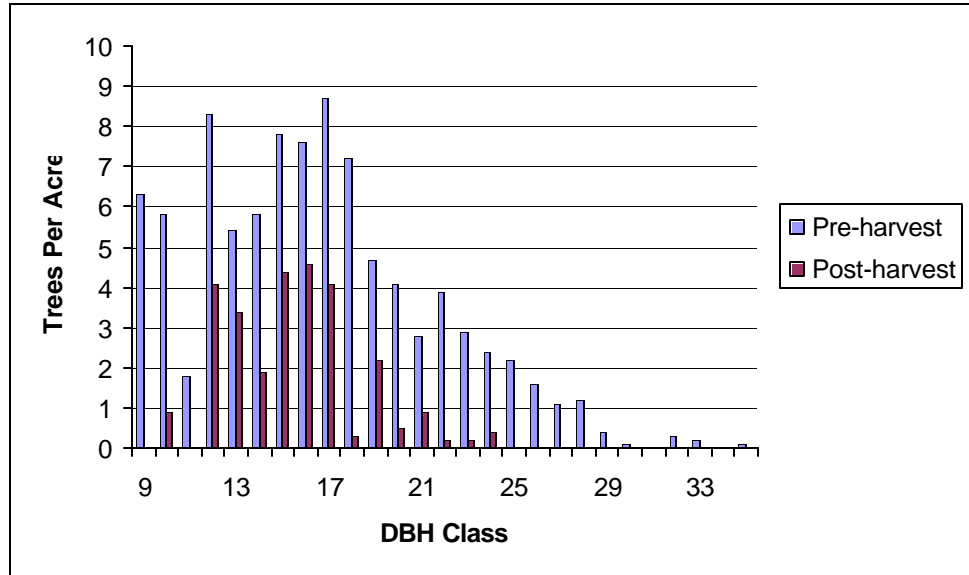


Figure 2. Pre- and post-harvest live tree densities derived from available timber cruise data in the 4 proposed harvest units.

For potential nesting and roosting substrate, figure 3 shows that there are currently an average of 13.7 snags per acre ≥ 15 inches dbh, and an average of 7 snags per acre ≥ 21 inches dbh. The proposed action would reduce these snag densities to an average of 1.6 snags per acre ≥ 21 inches dbh (as per cruise data from the 4 proposed harvest units), eliminating snags between 15 and 20 inches dbh. Granted, sampling efficiency of the timber cruise may have missed snags in these size classes, thus, the post-harvest snag retention levels (Fig. 3) may be underrepresented. However, such action would reduce the availability of potential nesting and roosting habitat within the project area. Thus, there would be low risk of direct and indirect effects to pileated woodpeckers within the project area from the proposed action.

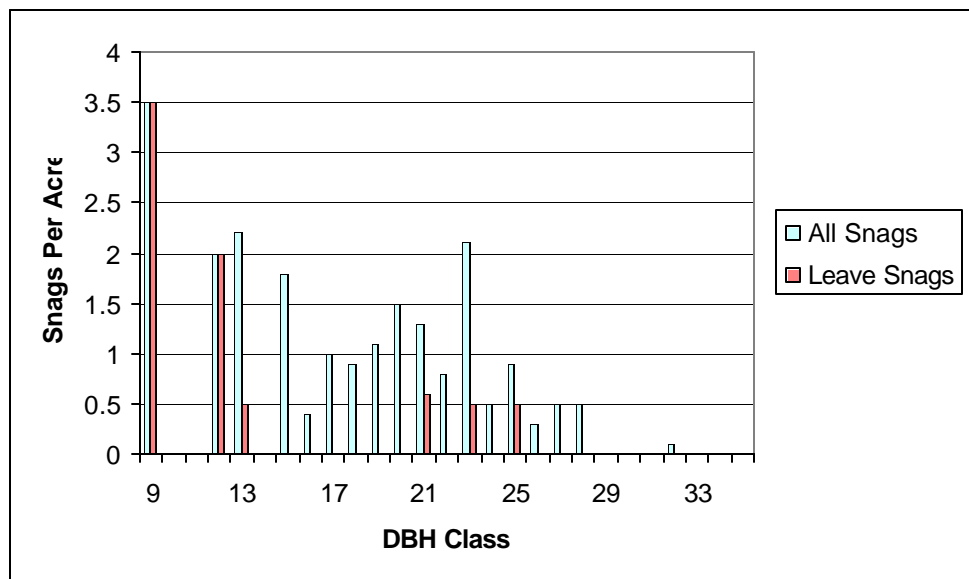


Figure 3. Pre- and post-harvest snag densities derived from available timber cruise data in the 4 proposed harvest units.

4.3.1.2.1.4 Action Alternative: Cumulative Effects

The proposed action would further reduce the amount of available nesting and roosting habitat for pileated woodpeckers, compounding the effects of previous clearcuts on the Helena National Forest (sections 20, 21, and 22, T15N R10W). Thus, there would be low risk of cumulative effects to pileated woodpeckers as a result of the proposed action.

4.3.1.2.2 Fisher

4.3.1.2.2.1 No Action Alternative: Direct and Indirect Effects

Under the no action alternative, the insect infestation would be expected to spread, creating large diameter snags and eventually (once the snags fall over), large diameter logs. Over time, the no action alternative would be expected to create denning and foraging habitat for fisher. Thus, there would be low risk of direct and indirect effects to fisher as a result of the no action alternative.

4.3.1.2.2.2 No Action Alternative: Cumulative Effects

Similar to the direct and indirect effects analysis, under the no action alternative, the insect infestation would be expected to spread. As a result, there would likely be temporary losses (50 to 60 years) of fisher habitat due to reductions in canopy closure. However, long-term, the no action alternative would likely create high quality fisher habitat through large diameter snags, downed logs, etc. Thus, there would be low risk of long-term cumulative effects to fisher from the no action alternative.

4.3.1.2.2.3 Action Alternative: Direct and Indirect Effects

The proposed action would harvest approximately 37 of 41 acres of fisher habitat within the project area. This would require approximately 50 to 60 years to re-establish through natural revegetation and structural development of the site. However, based upon the relatively natural state of the remainder of the parcel, other habitat, particularly that along Dry Creek, may provide additional habitat for fishers. Given that there are no recent observations of fisher in the Lewis and Clark Range (Vinkey 2003), fishers may have colonized from adjacent mountain ranges since 1988. Thus, there would likely be a low risk of direct and indirect effects to fisher as a result of the proposed action.

4.3.1.2.2.4 Action Alternative: Cumulative Effects

While there are at least 395 acres of fisher preferred habitat types within the analysis area, and the proposed action would harvest approximately 37 acres of this habitat, there would be low risk of cumulative effects to fisher because the proposed action would not: (1) fragment said habitat; (2) interrupt travel corridors; or (3) increase habitat fragmentation in an already fragmented environment. The affected fisher habitat is largely on USFS land, and within 1.5 miles of the Scapegoat Wilderness area. Thus, fisher habitat within the analysis area is relatively well protected from anthropogenic disturbance.

4.3.1.2.3 Flammulated Owl

4.3.1.2.3.1 No Action Alternative: Direct and Indirect Effects

Under the no action alternative, the insect infestation would be expected to spread, creating large diameter snags. Over time, the no action alternative would be expected to create additional flammulated owl habitat as forest succession proceeds and creates shrub layers for flammulated owl prey. Thus, there would be low risk of direct and indirect effects to flammulated owls as a result of the no action alternative.

4.3.1.2.3.2 No Action Alternative: Cumulative Effects

Similar to the direct and indirect effects analysis, under the no action alternative, the insect infestation would be expected to spread. As a result, there would likely be temporary losses (30 to 40 years) of flammulated owl habitat due to reductions in canopy closure. However, long-term, the no action alternative would likely create quality flammulated owl habitat through the presence of additional large diameter snags. Thus, there would be low risk of long-term cumulative effects to flammulated owls from the no action alternative.

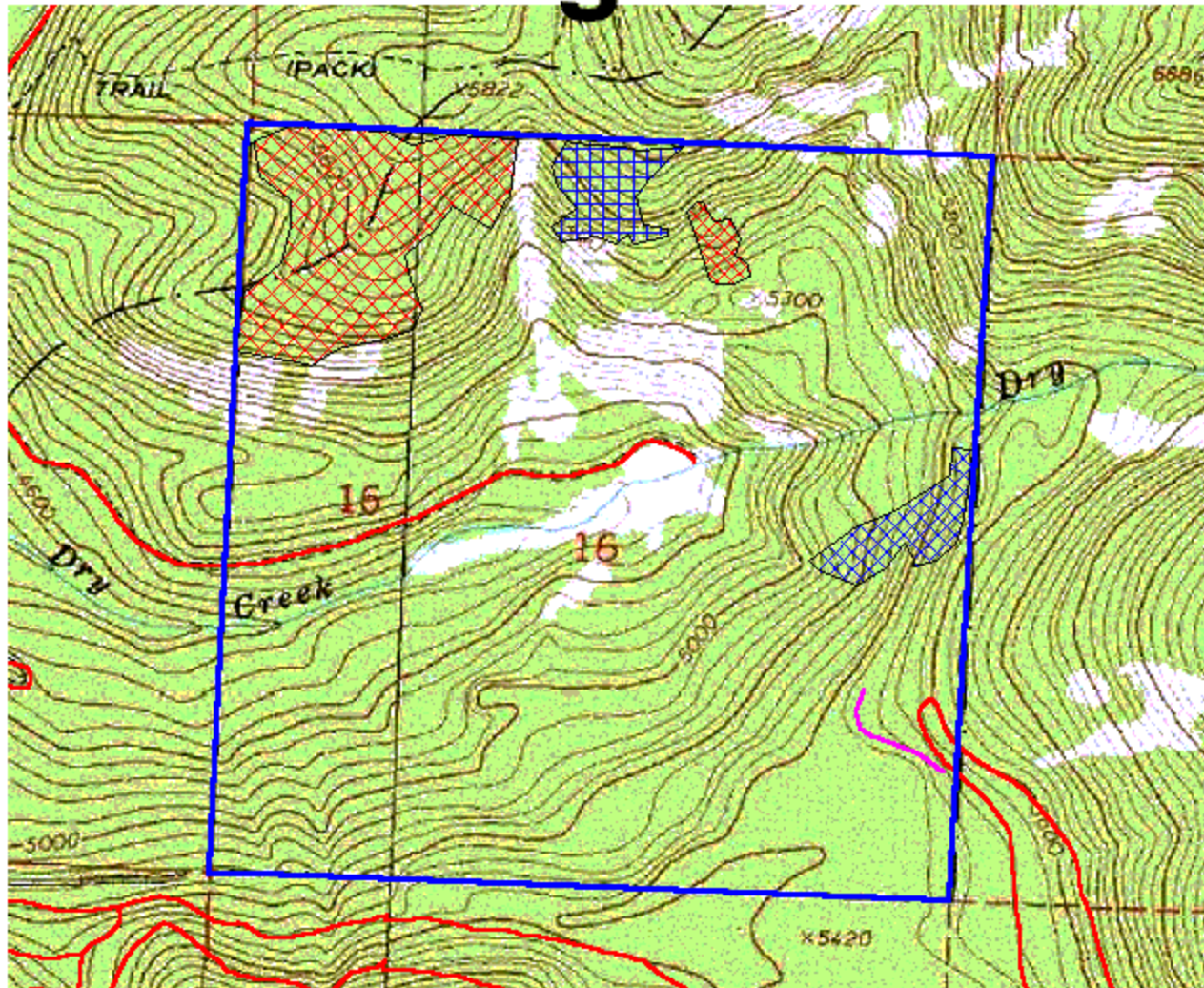
4.3.1.2.3.3 Action Alternative: Direct, Indirect, and Cumulative Effects

The proposed action would harvest timber on approximately 69 acres, reducing the availability of larger diameter snags for nesting by flammulated owls (Fig. 3). However, the proposed harvest would also increase the potential for development of a shrub layer, and eventually, thickets of regeneration that would provide habitat for flammulated owl prey. Though, sparse snags that could serve as potential nesting structures may not be able to fully capitalize on more abundant prey habitat. Thus, there may be low risk of direct and indirect effects to flammulated owls as a result of the proposed action. Because there has been very little historic human-induced habitat change within the affected parcel, there would be minimal risk of cumulative effects to this species as a result of the proposed action.

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Dry Creek Helicopter Salvage Sale

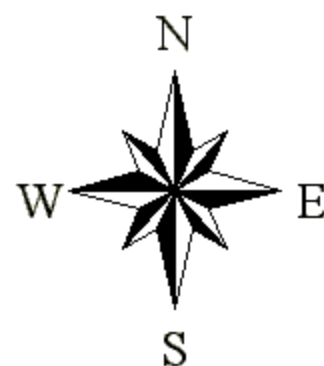


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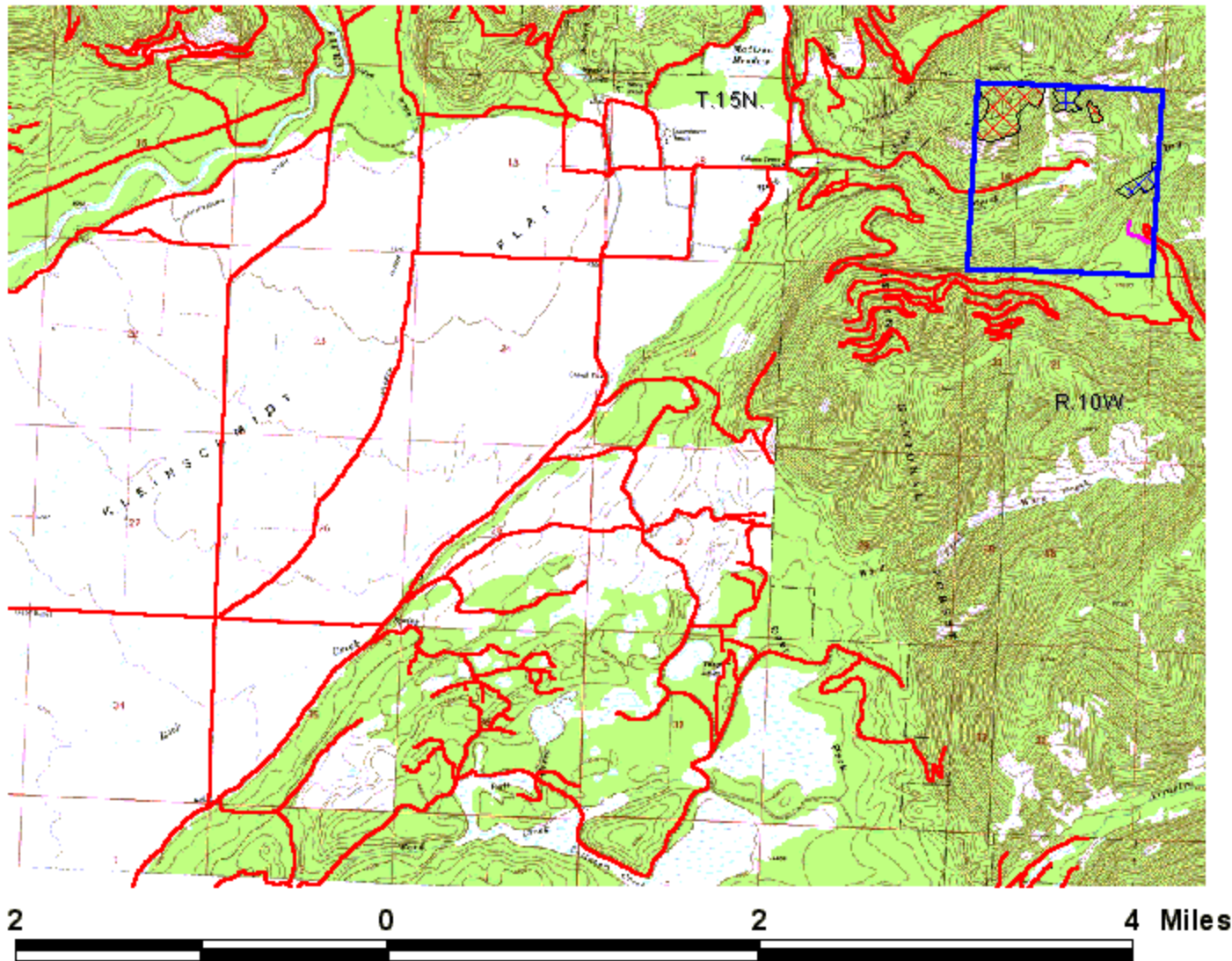
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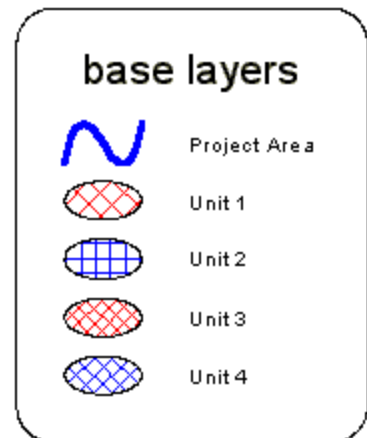
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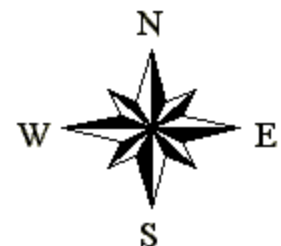
Dry Creek Helicopter Salvage Sale



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CVN 1-5-05



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12-13-04

Dry Creek Heli Timber Sale EA

Chapter 1: Purpose of the Project

- 1.5.1 Management activities associated with this project could have adverse effects on water quality.
- 1.5.2 Increased levels of compaction and erosion could occur as a result of the proposed harvest
- 1.5.3 Proposed activities could have adverse effects of fisheries habitat.
- 1.5.4 The spread of noxious weeds would increase as a result of the proposed actions

3.2.1 Water Quality, Soils, Fisheries and Noxious Weeds

Analysis Area

Refer to hydrology map for watershed boundaries and locations.

The analysis area contains one section of State Trust Lands, which is Section 16, T15N, R10 W. Section 16 is located on steep slopes and lies within the middle portion of the drainage on the main stem of Dry Creek. Dry Creek is a Class 1, second order tributary to Rock Creek. Dry Creek is drained by Salmon Creek; an unknown tributary to Dry Creek, two known springs, ephemeral draws and draws with no discernable channel. Ownership in the Dry Creek watershed is a combination of State, Forest Service and Private.

Very steep A2a+ Rosgen stream channel types dominate the upper reaches of Dry Creek in the project area. Most reaches in the State section have stable, well vegetated riparian areas. A large portion of the upper drainage in Forest Service ownership remains undeveloped (about 2000 of the 3600 acres) (e-mail Laura Burns). Most of the 1600 developed acres is now regenerating. In 1988, the Canyon Creek fire burned through the upper headwater portions of Dry Creek. Most of the burned area has revegetated and sediment production from the burned area is minimal.

The confluence of Salmon Creek and Dry Creek form Rock Creek. The lower reaches of Dry Creek, which lose surface flow below the State section have been impacted by cattle grazing resulting in channel instability, including unstable banks, lateral scouring and increased sedimentation. Dewatering due to heavy irrigation has also been an issue in the lower reaches. Numerous stream restoration projects to enhance habitat and restore stream channel functions have been completed on lower sections of Dry Creek by the Fish and Wildlife Service and the Montana Department of Fish Wildlife and Parks.

Analysis Methods

A watershed analysis was completed by a DNRC hydrologist for the proposed sale area to determine the existing direct, indirect and cumulative effects to water quality, soils, fisheries and noxious weeds.

The project area was evaluated using a coarse filter approach. A fine filter approach, including a water yield analysis was not conducted for this timber sale, due to the anticipated low potential for cumulative impacts.

Reconnaissance level surveys were used to observe existing conditions of riparian habitat conditions, soils, noxious weeds and water quality. Existing conditions of fisheries populations and habitat was obtained through data collected by the Montana Department of Fish Wildlife and Parks and the Helena National Forest.

Methods used for determining Riparian Management Zones (RMZ's) followed Forest Management Rule 36.11.425 Watershed Management, Streamside Management Rules and Riparian Management Rules.

Because of the project size, amount of DNRC ownership in the watershed and minimal amount of road adjacent to the stream channel in the project area, road sediment modeling was not completed.

3.2.1.1 Water Quality and Beneficial Uses- Existing Conditions

Regulatory Framework

Dry Creek is a B-1 Classified Stream in the Montana Surface Water Quality Standards. The B-1 classification is for waters that are considered suitable for domestic use after conventional treatment, as well as recreation, swimming and bathing. They are also suitable for growth and propagation of salmonid fish and other associated aquatic life, waterfowl, furbearers, agricultural and industrial water supplies. Another criteria for a B-1 classification is; no increases are allowed above naturally occurring concentrations of sediment, settleable solids, oils or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife.

Downstream beneficial uses include stock water, irrigation, recreation, domestic and fisheries.

One of the main concerns to water quality is sediment from roads. Sedimentation in the project area was observed to be low as a result of minimal management and low road densities in the middle and upper portions of the watershed. There is approximately .75 miles of road in the project area in section 16. The haul route contains sections of road, which do not meet Best Management Practice (BMP) standards. Some sections of road have rutting and would require additional drainage features for proper routing of surface flow.

Past harvest has also occurred within the project area. Old skid tails were observed, but are stable and well vegetated. Sign of an old road bed was found on the north side of the creek. Most sections of the bed were well vegetated and no signs of direct sediment delivery to the stream channel were observed.

3.2.1.2 Geology and Soils

Geology in the project area is a combination of Glacial deposits (Qg) and pCs Belt Series sedimentary formations, including; argillites, siltites, quartzites, basalts, tuffs, andesites, and breccias.

Soils in the project area are characterized by moderate to deep glacial till derived from quartzite and limestone on the valley floor and footslopes. Soil types are a combination of 87- Typic Ustochrepts - Rock outcrop complex, glacial trough walls and 790-Typic Cryochrepts-Typic Cryoboralfs complex, glaciated mountain slopes (Soil Survey of Helena National Forest Area, Montana).

87-- Typic Ustochrepts -Rock outcrop complex, glacial trough walls60-90% slopes

Average annual precipitation for this map unit ranges from 20-30 inches and elevation from 5,200 to 7,500 feet. These soils are well drained and have moderately coarse textured surface layers. Surface layers consist of channery loam soils 0-8 inches thick. Subsoil layers consist of channery loam to extremely channery loam up to depths of 60 inches or more. These high rock content soils have rapid infiltration and low natural erosion. These soils are low productivity sites and sensitive to ground disturbance.

790- TypicCryochrepts - Typic Cryoboralfs complex, glaciated mountain slopes 25-40 %.

Average annual precipitation for this map unit is 20-35 inches and elevation ranges from 4,800-7,500 feet. These soils are moderately drained and have medium textured surface layers formed in loess that has been influenced by volcanic ash. Typic Cryochrepts, loamy skeletal mixed have a loess surface layer of 2-7 inches thick and are mainly located on ridges and upper slopes. The subsoil ranges from very channery loam to extremely channery loam up to 45" thick. Those sections of the map unit containing volcanic ash surface layers are more susceptible to compaction and displacement.

Typic Cryoboralfs, loamy skeletal mixed are located in draw bottoms and lower slopes and have a surface layer of 0-6 inches. Subsoil layers consist of very stony loam up to 60" deep. These soil types have a moderate erosion, displacement and compaction hazard. Soils in this map unit are more susceptible to impacts during wet periods and rainfall events.

3.2.1.3 Fisheries

Both the Montana Department of Fish Wildlife and Parks and the Helena National Forest sampled Dry Creek. Forest Service samples in 1993 found cutthroat to be distributed in Section 15 T 15N, R10W. The abundance of cutthroat over 6' was 125 per mile (e-mail Laura Burns). In 1990, 10 samples of cutthroat were tested and found to be genetically pure. The unnamed tributary to Dry Creek in the North section of Dry Creek was not found to support fish.

The Montana Department of Fish Wildlife and Parks samples found both cutthroat and bulltrout to be present in Dry Creek. The middle and upper portion of the watershed contain good fish habitat. The banks are well vegetated and stable in most sections, with adequate quantities of large woody debris adding to habitat complexity and overhanging vegetation providing thermal protection. Section 16 in the project area contains very steep cascading pools, which are assumed to be fish migration barriers in some reaches.

The lower section of Dry Creek has been impacted from cattle grazing and dewatering, which has caused channel instability to occur. Factors contributing to channel instability are unstable banks, lateral scouring, increased width depth ratios and increased sedimentation. Approximately 3.5 miles of stream restoration to improve fish habitat has occurred in the lower sections of Dry Creek by the US Fish and Wildlife Service and Montana Department of Fish Wildlife and Parks. Restoration projects include several off site water developments, cross fencing, riparian fencing and improved grazing management plans.

3.2.1.4 Noxious Weeds

Knapweed was observed in the project area along roadsides, as well as spot infestations of this tile. Moist areas have more competitive vegetation and fewer weed occurrences. South slopes are droughty and at higher risk of weed establishment.

4.3.2. Water Quality, Soils, Fisheries, Weeds -Direct Indirect and Cumulative Impacts

4.3.2.1 Water Quality Issue 1.5.1

Alternative A: No Action

Under the No Action alternative direct, indirect and cumulative effects would remain the same.

Alternative B: Action Alternative

Under the action alternative, the potential for direct, indirect and cumulative effects to water quality is expected to be minimal. All of the proposed access and haul routes would utilize existing road systems, with the exception of ¼ mile of new spur road. Roads in the project area, which lack adequate road drainage, would be improved to meet minimum BMP standards. There are no roads in the project area located directly adjacent to stream channels, which are at risk of sediment delivery. There is an old road bed located on the north side of the main stem of Dry Creek, which is well vegetated and not at risk for sediment delivery. There is approximately ¼ mile of new road that would be constructed as a spur road to a landing area. The road would be located near the ridge, where no water is present. The risk to water quality are minimal, if any at this location.

Streamside Management Zone Laws and Rules require a minimum 100 ft buffer for mechanized equipment. Under Forest Management Rule 36.11.425 (1), the department shall establish a riparian management zone (RMZ) adjacent to the minimum width of the SMZ required under ARM 36.11.302 when forest management activities proposed on sites with high erosion risk or on sites that are adjacent to fish bearing streams or lakes. Because the proposed action is helicopter, no mechanized equipment is required or allowed within the harvest units. However, to protect water quality a 50 ft no cut buffer would be implemented, as well as restricted harvest between 50 and 100ft. An adequate buffer would provide sediment filtration to minimize sediment delivery to the stream channel, maintain large woody debris potential and provide thermal protection.

4.3.2.2 Soils

Alternative A: No Action Alternative

Under the action alternative direct, indirect and cumulative effects would remain the same.

Alternative B: Action Alternative

Under the action alternative direct, indirect and cumulative effects to soils are expected to be minimal. Under the action alternative, mechanized equipment would only be used in designated decking and landing areas outside the harvest units. As a result of no mechanized equipment in the harvest area, little or no effects are expected from harvest activities associated with helicopter logging. Wider tree spacing should improve growth of residual trees by reducing competition for limited soil moisture and nutrients.

Equipment use in these designated decking and landing areas is expected to be extensive and would result in increased risk of compaction and displacement of surface soils. Sites where moderate to heavy compaction has occurred should be scarified 3-6 inches to reduce compaction and seeded with site-adapted grasses to reduce erosion and reduce weed encroachment.

General Mitigation Measures

Portions of the existing access roads that have inadequate drainage and do not comply with BMP's should have drain-dips or waterbars installed to improve drainage and erosion control based on site-specific plans and as located by forest officer.

All new road construction would meet BMP standards.

Limit hauling operations to periods when soils are relatively dry, frozen or snow covered, to minimize rutting, and maintain drainage features.

Retain a portion of large woody debris and fine slash for nutrient cycling and longterm soil productivity. Consider lop and scatter of concentrated slash as needed or jackpot burning.

All newly disturbed soils at landing sites should be promptly reseeded to site adapted grasses to stabilize roads from erosion and reduce weed encroachment.

All Streamside Laws and Rules would be implemented.

4.3.2.3 Fisheries

Alternative A: No Action Alternative

Under the action alternative direct, indirect and cumulative effects would remain the same.

Alternative B: Action Alternative

Under the action alternative direct, indirect and cumulative impacts to fisheries is expected to be minimal. There are no harvest units on the main stem of Dry Creek. There is a harvest unit (unit 4) located on an unnamed perennial tributary to Dry Creek.

One of the main pollutants that effect fisheries habitat is sediment. Through the implementation of helicopter logging techniques, the risk of sediment production from soil disturbance is expected to be minimal, reducing the risk of sediment delivery to the stream channel. To protect riparian habitat essential for providing thermal protection, bank stability, large woody debris potential and hiding cover a 50 ft no cut buffer would be required as well as restrictive harvest between 50 and 100ft. This buffer distance should be sufficient to help maintain large woody debris recruitment and help in thermal regulation, as well as provide sediment filtration.

There is no decking or landing areas located near the stream channel or at a distance that would allow any risk of sediment delivery.

4.3.2.4 Noxious Weeds

Alternative A: No Action Alternative

Under the action alternative direct, indirect and cumulative effects would remain the same.

Alternative B: Action Alternative

Under the action alternative an increase in noxious weed activity is expected at decking and landing sites due to increased ground disturbance.

With weed species such as thistle and to a lesser extent knapweed, weed seeds may already be scattered throughout the designated use areas. Proposed landings in designated areas have an increased risk of weed establishment.

For this project an Integrated Weed Management (IWM) approach would be implemented that would include: prevention, revegetation and weed control measures for spot outbreaks, which are considered the most effective weed management treatments. Short-term goals would be to reduce existing noxious weed populations and increase native plants and seeded grasses. Where weeds are replaced with grasses, erosion would be reduced due to the improved plant cover. Localized herbicide applications would be used, primarily along disturbed roadside edges and spot treatments of small infestations. An herbicide treatment of most of the roadsides would be accomplished once prior to proposed activities and once following completion of activities. To protect water quality, herbicide would not be applied where runoff could enter surface waters or riparian features.

Integrated Weed Management Mitigation's

To reduce current noxious weed infestations and limit the spread of weeds the following integrated weed management mitigation measures of prevention and control would be implemented.

* Revegetate all newly disturbed soils on road cuts and fills promptly with site-adapted grasses (including native species) to reduce weed encroachment and stabilize roads from erosion

* Weed treatment measures include herbicide and/or biological applications along portions of project roads and accessible sites with a priority on spot outbreaks of noxious weeds and as designated by the forest officer. Any restricted use herbicide treatments would be implemented by a certified applicator according to herbicide label directions in accordance with applicable laws and rules of the Powell County Weed District.

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